A Social-Academic Network Analysis of the EURO Working Group on DSS

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ABSTRACT

This paper addresses aspects of the social network analysis (SNA) performed on the social-academic network implemented for the EURO Working Group on Decision Support Systems (EWG-DSS). The EWG-DSS network has more than 105 members and is defined with the objective of analysing and representing the various relationships that academically link the group members, as well as evaluating the group’s collaboration dynamics. This paper shows graphical representations and discusses their corresponding interpretation and analytical data. This work is part of the study carried out within the underlying project of the EWG-DSS social-academic network to understanding how the group interacts, as well as encouraging new research and promoting further collaboration among the EWG-DSS group members.

Keywords: Collaboration, Decision Support Systems, Social Network, Social Network Analysis (SNA), Working Groups

INTRODUCTION

Analysing the relationships among groups is an interesting issue which has been studied in several communities. The usefulness of Social Network Analysis (SNA) as a method to support research community interactions, has shown to be an appealing factor in recent studies within the Information Systems community.

In Vidgen et al. (2007), they have exploited a SNA including the research community of the ECIS Conferences in the period between 1993 and 2005. They have focused their analysis on two specific networks, representing papers co-authorships and conference panel memberships. Among other outcomes of that SNA, the authors were able to show how the ECIS community is organized and what actions should be more appropriate to foster an environment for the

DOI: 10.4018/jdsst.2010100102
ECIS, in which collaborative research could be better encouraged and ideas better shared. Based on the same motivation of Vidgen et al. (2007), the current work presents an analysis for the EURO Working Group on DSS, which focuses on the research collaboration of the group members within the central area of Decision Support Systems and its co-related topics. As already reported in Dargam, Ribeiro, and Zarate (2010), the main motivation for analyzing the EURO Working Group on DSS is to represent and analyze the various relationships that academically link over 105 members. For this purpose we developed an academic collaborative network to enable us to evaluate the group’s collaboration dynamics since its foundation in 1989, up to the present moment. This paper is a follow-up for the initial study providing more contributions for the analysis of the EWG-DSS social network. As a by-product, we hope to promote further collaboration among the academic members of the group in common projects and joint-publications. Further, this paper contributes to the evaluation of social informal relationships among the members of the group.

Social networks are usually implemented to represent different real-life communities and play an important role in determining the way problems are solved, organizations are run, and the degree to which individuals succeed in achieving their goals (Newman 2001b, 2003; Weimao & Simas 2007; Rocha et al., 2005). The power of social network analysis stems from its difference from traditional social scientific studies (Newman 2003; Freeman 2000). Such analysis produces an alternate view, which focuses on how the structure of ties affects individuals (persons, organizations, states) and their relationships, rather than treating them as discrete units of analysis. In other words, the attributes of individuals are less important than their relationships and ties with other actors within the network.

In our current study, we observe the same phenomenon reported in Newman (2003), which faces drawbacks in social networks configuration analysis, due to a small number of actors (poor statistical accuracy and relevance) and intrinsic subjectivity (biases on the part of respondents to questionnaires or interviews). In the EWG-DSS this is also the case, since the group has a relatively small number of members and the data collection was mainly obtained via the members responses via email. Hence, to avoid the problems of poor statistical accuracy and intrinsic subjectivity, we use concepts and methods defined for a specific type of social networks, denoted as weighted collaboration/affiliation networks (Newman, 2001b). Collaboration networks are affiliation networks in which actors collaborate in associations of some kind and the connections are established by common group memberships (Newman, 2003). For example, a network of scientists, in which any pair is connected if they co-authored one or more papers, is a good example of a Boolean collaboration network (Newman, 2001a, 2001b). When we consider the number of papers co-authored between two authors (two nodes) as the strength of the relation we have a weighted collaboration network (Newman, 2001b).

For developing the EWG-DSS social-academic network, we started by using the generalized Jaccard similarity measure (Rocha et al., 2005) to construct the initial Boolean matrices of: (1) authors versus papers; and (2) papers versus topics. The topics were defined by the given keywords of interest for the DSS area. After constructing the weighted network we unfolded and analysed it with two specific network frameworks, namely: the PAJEK Network framework (http://vlado.fmf.uni-lj.si/pub/networks/pajek/) and the NWB Network Workbench framework (http://nwb.slis.indiana.edu/), whose characteristics are described in the sequel of this work. Both frameworks are academic public-domain MS-Windows-based programs for network analysis and visualization.
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